

C6 Resources--Updated Language for DTS and Reservoir Saturation Monitoring
Damonica.Pierson

to:

Michele Dermer

06/23/2010 01:41 PM

Show Details

Michele, please add the following updates to the current working version of the UIC Permit:

Section II(E)(3)(b)(i)(3) Distributed Temperature Sensor ("DTS")--Add this sentence to the end of the paragraph:
Temperature measurements shall be collected during the active and post-injection phases.

Section II(E)(3)(b)(i)(5) Reservoir Saturation Monitoring--Dual-burst thermal decay time tools allow for a post-injection look at the thermal neutron adsorption, described by the capture cross section of the formation to infer water saturation.

DaMonica Pierson
Sr. Technical Advisor
Shell Exploration and Production
Upstream Americas CO2/CCS
150 N. Dairy Ashford
Houston, TX 77079

Phone (832) 337-2172
Cell (713) 677-4374
Email damonica.pierson@shell.com

C6 Resources--Additional UIC Permit Updates

Damonica.Pierson

to:

Michele Dermer

06/17/2010 12:34 PM

Show Details

History: This message has been replied to and forwarded.

Michele, attached below are the additional items that we discussed for inclusion in the permit or as supporting documentation for the permitting process.

✓ Community Relations Summary--this document lists the events that have been facilitated by our Public Relations team since April 2010

<<Community Outreach Since April 1.doc>>

✓ Revised Project Timeline for Appendix I--the term 'minifrac' was replaced with 'Injection Test'

<<UIC Schedule.xls>>

Agency Contacts--these departments and individuals will receive copies of monitoring results and other reports required by the permit

California DOGGR

~~Mr. Mike Stettner~~ *Ms. Marilyn Habel*
California Department of Oil, Gas and Geothermal Resources
Environmental and Underground Injection Control
801 K Street, MS 20-22
Sacramento, CA 95814-3530

California RWQCB

Ms. Christine Boschen
San Francisco Bay RWQCB--District 2 Office
1515 Clay Street, Suite 1400
Oakland, CA 94621

Solano County Department of Resource Management

Ms. Nedzlene Ferrario
Solano County Department of Resource Management--Current Planning
675 Texas Street, Suite 5500
Fairfield, CA 94533

Blowout Preventer Schematics*N/A**(MD - 6/17/10) - do not need above ground schematics for permit*

Please be aware that only the drilling rig is equipped with a blowout prevention (BOP) assembly during the drilling and completion of the wells. This BOP is designed according to DOGGR's Class 4 standards. The drill rig will be contracted through a third party, hence the schematics are not ours to provide. We can draft a sanitized, generic version for the permit, if necessary. The well itself will be equipped with an injection tree assembly and a well

head that includes a manual shut off valve. A schematic of the well head assembly is attached. Note the control valve on the 'T'.

<<NCCRP Well Head Assembly_4-14-2010.pdf>>

DaMonica Pierson
Sr. Technical Advisor
Shell Exploration and Production
Upstream Americas CO2/CCS
150 N. Dairy Ashford
Houston, TX 77079

Phone (832) 337-2172
Cell (713) 677-4374
Email damonica.pierson@shell.com

Community Outreach Since April 1, 2010

(Note: Reduced communication efforts in May and June due to budget constraints)

Public Presentations

- Rio Vista Rotary Club
- Trilogy Community Meeting with community residents

Stakeholder Meetings

- Solano County Supervisors Reagan, Vasquez, Kondylis and Seifert
- Solano County Agricultural Commissioner Jim Allan
- Solano County Economic Development Corporation
- California Energy Commission staff members Jim Boyd, Mike Gravely and Adam Gottlieb
- Assembly member Yamada
- Rio Vista Chamber of Commerce Executive Director Mary Peinado
- Local residents Krista Hays and Kathy Dean

Invited stakeholders to attend the Carbon Capture & Sequestration Public Workshop hosted by EDF and NRDC; attended workshop

Community Meetings Attended

- Rio Vista City Council
- Solano County Board of Supervisors
- Rio Vista Chamber's "Wake Up, Rio Vista!" with Solano Transportation Authority
- California Highway 12 Association

Monitoring

- Media monitoring (e.g., Rio Vista News Herald cartoon, editorial on Rio Vista Advocates.com, DOE announcement)
- Community information response (e.g., e-mail box query from Cadmus Group, correspondence with civic groups)

Activity ID	Activity Name	Current Duration (Wks)
Site Prep		
DMP1010	Well Pad Construction	6
Drilling		
DMP1080	Drill Injection Well	11
DMP1110	Test (includes Injection Test, SRT, and FOTs)	2
DMP1100	Drill Observation Well	4
Completions		
DMP1090	Well Completions	4
Facilities		
DMP1200	US EPA CO2 Injection Approval	12
DMP1210	CO2 Pumping	8
DMP1220	CO2 Monitoring	24
DMP1230	Decommissioning and TA	8



RE: Project in southern Solano County

Michele Dermer to: Ryan_Olah

06/16/2010 02:08 PM

Dear Ryan,

I am the US EPA Region IX permit writer for this project located in Solano County. The applicant (C6 Resources) has applied for an Underground Injection Control (UIC) permit from EPA for two wells at the subject site, one an injection well for carbon dioxide sequestration, and the other, a monitoring well. Their subcontractor, Fritts Golden of Aspen Environmental provided you with a number of relevant documents for your information and review (see below for related e-mails).

I am requesting an informal consultation with USFWS for this project.

Can you please provide your input regarding any concerns to EPA regarding the proposed project?

Thank you for your assistance.

Sincerely,

Michele

Michele Dermer
Environmental Engineer, Underground Injection Control
Water Division, Mail Code WTR-9
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105-3901
office (415) 972-3417
fax (415) 947-3545 (include name and mail code)

Ryan_Olah

i looks like we may be able to do informal consul...

05/20/2010 09:42:10 AM

From: Ryan_Olah@fws.gov
To: Fritts Golden <FGolden@aspeneg.com>
Cc: Michele Dermer/R9/USEPA/US@EPA
Date: 05/20/2010 09:42 AM
Subject: RE: Project in southern Solano County

i looks like we may be able to do informal consultation, but we would still need to look at all of the information. Informal consultation usually is not that long of a process, and can usually be completed within 30 days.

Ryan

Fritts Golden
<FGolden@aspeneg.
com>

05/20/2010 08:45
AM

"Ryan_Olah@fws.gov"
<Ryan_Olah@fws.gov>

"Michele Dermer

To

cc

(dermer.michele@epa.gov)"
<dermer.michele@epa.gov>

Subject

RE: Project in southern Solano
County

Ryan

Given site conditions and the nature of the project, how 'formal' will a section 7 consultation need to be? Would it be sufficient for EPA to send you an email requesting a consultation, discuss the project on the telephone, and then send an email documenting the results of the discussion? I know that everyone (USFWS and EPA) is very busy and am looking for the best way to facilitate this. For a similar WESTCARB project in Arizona, the USFWS office for that region used this approach. Also, how long would the process take?

Fritts

-----Original Message-----

From: Ryan_Olah@fws.gov [mailto:Ryan_Olah@fws.gov]
Sent: Thursday, May 20, 2010 8:36 AM
To: Fritts Golden
Subject: RE: Project in southern Solano County

Fritts,

This project should probably undergo a Section 7 consultation with the Service. EPA would be the federal agency that would consult with the Service. Let me know if you have additional questions.

Ryan

Ryan Olah
Coast Bay Branch Chief
U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way
Sacramento, CA 95825
(916) 414-6623

Fritts Golden
<FGolden@aspenerg.
com>

05/18/2010 01:04
PM

"Ryan_Olah@fws.gov"
<Ryan_Olah@fws.gov>

To

cc

Subject

RE: Project in southern Solano

County

Ryan

This is a CEQA Initial study we provided to Solano County with a Use Permit application. I will send the Biology report in a separate email following this one. This is similar to a project for which an MND was prepared in Thornton, on DWR property at Grizzly Slough I believe you reviewed that MND. But, this project is remote from water and in the middle of dry agriculture (wheat, post-reaping grazing).

Fritts

-----Original Message-----

From: Ryan_Olah@fws.gov [mailto:Ryan_Olah@fws.gov]

Sent: Tuesday, May 18, 2010 12:39 PM

To: Fritts Golden

Subject: Fw: Project in southern Solano County

Fritts,

can you send us any information you have on your proposed project? Thanks.

Ryan

Ryan Olah
Coast Bay Branch Chief
U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way
Sacramento, CA 95825
(916) 414-6623

----- Forwarded by Ryan Olah/SAC/R1/FWS/DOI on 05/18/2010 12:38 PM -----

Susan
Moore/SAC/R1/FWS/
DOI

05/18/2010 09:54
AM

To
Fritts Golden <FGolden@aspenneg.com>

cc
Cay Goude/SAC/R1/FWS/DOI@FWS, Chris
Nagano/SAC/R1/FWS/DOI@FWS, Eric
Tattersall/SAC/R1/FWS/DOI@FWS, Ryan
Olah/SAC/R1/FWS/DOI@FWS, Theresa
Marino/SAC/R1/FWS/DOI@FWS, Sherry
Byers/SAC/R1/FWS/DOI@FWS

Subject
Re: Project in southern Solano
County(Document link: Ryan Olah)

Hi Fritts,

I have asked Cay Goude, our Assistant Field Supervisor, to give yo a call. She oversees projects in Solano County. Thanks Susan

Susan Moore
Field Supervisor
Sacramento Fish and Wildlife Office
Phone: (916) 414-6700
Fax: (916) 414-6714

Fritts Golden
<FGolden@aspeneg.
com>

05/18/2010 09:51
AM

"Susan_Moore@fws.gov"
<Susan_Moore@fws.gov>

To

cc

Subject
Project in southern Solano County

Susan

I am working on a project in the Montezuma Hills area of Solano County. It is about 2 miles north of the Sacramento River and 2 miles east of Suisun Marsh in upland agricultural land. It sits in the midst of an existing wind electric generation facility. I would like to discuss the project with you briefly to ensure that we have adequately coordinated with Fish and Wildlife. A site survey and records search have been done by WRA. No species of concern were found and no suitable habitat. The project involves about 8 acres of earthwork (pad building) and the drilling of two wells.

Solano County is the local lead agency for environmental review. USEPA is reviewing the project for a permit to construct the wells and inject a small volume of CO2 2 miles underground. This is part of a DOE-funded investigation of Carbon Capture and Storage.

Please telephone me when you can so that I may review the project in more detail.

Regards
Fritts Golden

B.Fritts Golden, AICP
Aspen Environmental Group
235 Montgomery Street Suite 935 - San Francisco, CA 94104

(415) 955-4775 ext.208 Fax: (415) 955-4776 FGolden@Aspeneg.com
Conserve P Print Sparingly

[attachment "02 Final CEQA Initial Study 11-11-09.doc" deleted by Ryan
Olah/SAC/R1/FWS/DOI]

FW: C6 Resources--Injectivity Test Language
Damonica.Pierson
to:
Michele Dermer
06/15/2010 04:49 PM
Show Details

History: This message has been forwarded.

Sorry about that.

-----Original Message-----

From: Dermer.Michele@epamail.epa.gov [mailto:Dermer.Michele@epamail.epa.gov]
Sent: Tuesday, June 15, 2010 6:22 PM
To: Pierson, Damonica M SEPCO-UAS/E/C
Subject: Re: C6 Resources--Injectivity Test Language

Please unzip and resend. thanks

From: <Damonica.Pierson@Shell.com>
To: Michele Dermer/R9/USEPA/US@EPA
Date: 06/15/2010 04:11 PM
Subject: C6 Resources--Injectivity Test Language

Michele, attached is the language that we tailored for the Injectivity Test (Minifrac). We took what was written for the Step Rate Test and modified it. The attached section should come before the SRT as the new Section II(B)(3)(b). Old Section II(B)(3)(b)(ix) in which the Injectivity Test is explained relative to the SRT can be deleted.

<<Injectivity Test Language.ZIP>>

DaMonica Pierson
Sr. Technical Advisor
Shell Exploration and Production
Upstream Americas CO2/CCS
150 N. Dairy Ashford
Houston, TX 77079

Phone (832) 337-2172
Cell (713) 677-4374
Email damonica.pierson@shell.com

***** ATTACHMENT NOT DELIVERED *****

This Email message contained an attachment named
Injectivity Test Language.ZIP

which may be a computer program. This attached computer program could contain a computer virus which could cause harm to EPA's computers, network, and data. The attachment has been deleted.

This was done to limit the distribution of computer viruses introduced into the EPA network. EPA is deleting all computer program attachments sent from the Internet into the agency via Email.

If the message sender is known and the attachment was legitimate, you should contact the sender and request that they rename the file name extension and resend the Email with the renamed attachment. After receiving the revised Email, containing the renamed attachment, you can rename the file extension to its correct name.

For further information, please contact the EPA Call Center at (866) 411-4EPA (4372). The TDD number is (866) 489-4900.

***** ATTACHMENT NOT DELIVERED *****

(b) Injectivity Test

Permittee requests permission to conduct an injectivity test on injection well C6-1 to evaluate formation fracture pressure **before** the step rate test (SRT) is performed. The injectivity test results will be used to assess receptivity of the potential injection interval and to confirm the SRT test injection pressures span the range from the measured initial shut-in to the parting pressure of the injection interval. Detailed plans for conducting the injectivity test shall be submitted to EPA for review, possible editing, and approval. Once approved, Permittee may schedule the injectivity test, providing EPA at least thirty (30) days notice before the injectivity test is conducted. Permittee shall adhere to the following conditions in designing and conducting their required injectivity test:

- (i) Injection as proposed in an approved injectivity test procedure is temporarily authorized while the injection is completed.
- (ii) Prior to testing, shut in the well long enough so that the bottom-hole pressure approximates shut-in formation pressure.
- (iii) Measure pressures with a down-hole pressure bomb or other approved pressure monitoring system and synchronize the data with data from a surface pressure recorder.
- (iv) Use enough rate and volume to establish and extend a fracture, of which can be monitored with the surface pressure recorder.
- (v) After a sufficient volume of fluid has been pumped and fracture has been propagated, shut down pumps, record the instantaneous shut-in pressure, and monitor surface pressure decline long enough until fracture closure pressure is observed.
- (vi) A second injectivity test may be recommended by EPA to ensure consistency in fracture pressure results.
- (vii) Permittee shall report the results to EPA within 45 days of conducting the SRT. The results shall include analyses of the pressure decline from the injectivity test and the pressure versus rate.

(viii) Permittee may produce water from the saline injection interval, filter it, and then use it for the injectivity test. Permittee may also use commercial brine to conduct the injectivity test. Laboratory analysis that yields representative data on the physical, chemical, or other relevant characteristics of all injected fluids proposed for use during the injection test shall be conducted in accordance with requirements outlined in paragraph E.1.(a). If using non-native fluids, laboratory analysis of proposed injectivity test injection fluids shall confirm the non-hazardous nature of the fluids before the injectivity test is conducted.

(ix) Detailed plans for conducting the injectivity test shall be submitted to EPA for review, possible editing, and approval. If approved, Permittee may schedule the injectivity test, providing EPA at least thirty (30) days notice before the test is conducted. Non-native fluids to be used during the injectivity test shall comply with Hazardous Waste Determination (see paragraph D.1.(b). of this section) and fluid testing requirements (see paragraph E.1.(a). of this section).

CDF+G



RE: Montezuma Hills Drill Pad and Well Project

Brenda Blinn to: Fritts Golden

Cc: Michele Dermer, "Jeff Dreier"

05/20/2010 03:35 PM

Fritts: Based on the information provided, there appears to be a low likelihood for sensitive plant and wildlife species to occur within the project area. However, DFG may have further comments on the proposed project, and provide recommendations on avoiding or reducing any potential impacts of the project on natural resources during the CEQA review process.

Thank you for contacting DFG.

Brenda

Brenda Blinn - Environmental Scientist
California Department of Fish and Game - Bay Delta Region
Habitat Conservation Planning
P.O. Box 47
Yountville, California 94599
V: 707 944-5541
C: 707-227-6956
F: 707 944-5563
bblinn@dfg.ca.gov (mailto:bblinn@dfg.ca.gov)

Please note: Pursuant to Governor's Executive Order S-16-09, we are closed on the first, second and third Friday of each month.

>>> Fritts Golden <FGolden@aspeneg.com> 5/20/2010 2:21 PM >>>

Brenda

Thank you for your quick reply. The project is undergoing CEQA review by Solano County before it can issue a conditional use permit. We expect the Initial Study to be issued by the county in about a month. Attached is the Initial Study that was provided to the county as part of the conditional use permit application. The project description in the Initial Study is quite complete, and I hope provides you the information you need.

The site has been in dry land agricultural use for many generations. The site has no trees or shrubs. It is regularly disked by the farmer and sown in dry land grain. After reaping the crop, sheep and cattle are released on the land to graze. These pattern of use has occurred for decades. For these reasons and based on the site inspection, no seasonal plant surveys were indicated.

The attached Map Air images file shows the location of the site. The last two figures in the file are Google images. One shows the site and the farming pattern within which it is situated. The vertical elements on the Google image are tall windmills situated on the property. The last Google image show a larger area around the project site. To the west of the site can be seen a dark area that has been newly disked. The rest of the land has been newly harvested. These images are part of a much larger wind generation facility that is co-located with the farm. The roads on the property are compacted gravel.

Please let me know if there is additional information you may require. Jeff Dreier, at WRA, prepared the biological report that I provided to

you earlier. He is on vacation until June 1, but I can help with any information you may require.

Regards
Fritts

-----Original Message-----

From: Brenda Blinn [mailto:BBLINN@dfg.ca.gov]
Sent: Thursday, May 20, 2010 1:36 PM
To: Fritts Golden
Cc: Michele Dermer (dermer.michele@epa.gov)
Subject: Re: Montezuma Hills Drill Pad and Well Project

Hello Fritts: I have reviewed the Biological Assessment for the subject project. Currently, the project description is not detailed enough for DFG to assess potential impacts. We would need to have a detailed description of all construction-related activities, related infrastructure, timeframe, etc. to provide a final determination. My determination and any recommendations would also be subject to supervisory review and approval. At what stage of the NEPA/CEQA process is this project? DFG could more thoroughly review the potential impacts of the proposed project during the public comment period.

A preliminary comment I have is the fact that, according to the B.A., a botanical survey was conducted within the proposed project area on December 18, 2008. Botanical surveys were not floristic in nature, and should be conducted throughout the blooming period for plant species potentially occurring within the proposed project site. DFG-recommended survey and monitoring protocols and guidelines are available at http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf.

If you have any further questions, please contact me at 707-944-5541 or bblinn@dfg.ca.gov.

Brenda Blinn - Environmental Scientist
California Department of Fish and Game - Bay Delta Region
Habitat Conservation Planning
P.O. Box 47
Yountville, California 94599
V: 707 944-5541
C: 707-227-6956
F: 707 944-5563
bblinn@dfg.ca.gov (<mailto:bblinn@dfg.ca.gov>)

Please note: Pursuant to Governor's Executive Order S-16-09, we are closed on the first, second and third Friday of each month.

>>> Fritts Golden <FGolden@aspenerg.com> 5/20/2010 11:14 AM >>>

Brenda:

Attached is a biological resources report prepared by WRA for a

project

site in Solano County. Briefly, the project requires construction of a drill pad and installation of two wells in the Montezuma Hills area of southern Solano County. The site and vicinity have been evaluated with regard to potential impacts on biological resources and it has been determined that no impacts to these resources are expected.

The wells will be used to injection a small quantity of CO2 into an underground formation approximately 2 miles below the ground surface. This is a research project to investigate the formation and the behavior of CO2 in the formation. USEPA is responsible for permitting the injection and will evaluate information from the well before and after injection. The only surface disturbance from the project will be construction of a drill pad and penetration of the ground with two wells. The site is used for dry land farming (wheat and grazing) and is in a wind energy farm. The site is plowed every year or two by the farmer. The site is relatively flat and on a ridge and is not near any structures or water bodies.

If, after reviewing the report you have any questions, please contact me by return email or phone
fgolden@aspeneg.com<mailto:fgolden@aspeneg.com> (415) 955-4775
ext 208. or Michele Dermer at USEPA
dermer.michele@epa.gov<mailto:dermer.michele@epa.gov> (415)
972-3417

After reviewing the attached document, please email Michele and myself indicating that you have received and reviewed the report and concur in the conclusion that there is no impact anticipated to biological resources. This will be our confirmation that we have coordinated with your agency with regard to the project.

We are also coordinating with Ryan Olah at USFWS.

Thank you for your assistance

Regards
Fritts

B.Fritts Golden, AICP
Aspen Environmental Group
235 Montgomery Street Suite 935 - San Francisco, CA 94104
(415) 955-4775 ext.208 Fax: (415) 955-4776
FGolden@Aspeneg.com<mailto:GFGolden@Aspeneg.com>
Conserve P Print Sparingly

Fritts Golden
to:
BBlinn@DFG.ca.gov
05/20/2010 11:22 AM
Cc:
Michele Dermer
Show Details

Brenda:

Attached is a biological resources report prepared by WRA for a project site in Solano County. Briefly, the project requires construction of a drill pad and installation of two wells in the Montezuma Hills area of southern Solano County. The site and vicinity have been evaluated with regard to potential impacts on biological resources and it has been determined that no impacts to these resources are expected.

The wells will be used to injection a small quantity of CO2 into an underground formation approximately 2 miles below the ground surface. This is a research project to investigate the formation and the behavior of CO2 in the formation. USEPA is responsible for permitting the injection and will evaluate information from the well before and after injection. The only surface disturbance from the project will be construction of a drill pad and penetration of the ground with two wells. The site is used for dry land farming (wheat and grazing) and is in a wind energy farm. The site is plowed every year or two by the farmer. The site is relatively flat and on a ridge and is not near any structures or water bodies.


If, after reviewing the report you have any questions, please contact me by return email or phone fgolden@aspeneg.com (415) 955-4775 ext 208. or Michele Dermer at USEPA dermer.michele@epa.gov (415) 972-3417

After reviewing the attached document, please email Michele and myself indicating that you have received and reviewed the report and concur in the conclusion that there is no impact anticipated to biological resources. This will be our confirmation that we have coordinated with your agency with regard to the project.

We are also coordinating with Ryan Olah at USFWS.

Thank you for your assistance

Regards
Fritts

B.Fritts Golden, AICP
Aspen Environmental Group
235 Montgomery Street Suite 935 - San Francisco, CA 94104
(415) 955-4775 ext.208 Fax: (415) 955-4776 FGolden@Aspeneg.com
Conserve  Print Sparingly



C6 Summary Memo

235 Montgomery Street, Suite 935, San Francisco, CA 94104-3002
Tel. 415-955-4775, Fax 415-955-4776, www.aspeneg.com

PROJECT MEMORANDUM
C6 RESOURCES LLC SMALL VOLUME INJECTION PROJECT

Date: May 17, 2010
To: Michele Dermer, USEPA
Copy: DaMonica Pierson, C6 Resources
From: Fritts Golden

Subject: SDWA Coordination in Support of C6 Resources UIC Permit

Michele:

Per our telephone conversation regarding compliance with the Safe Drinking Water Act's agency coordination requirements for the C6 Resources Small Volume Injection Project, this memorandum:

1. Identifies the contacts made with resource agencies as required by 40 CFR 144.4
2. Summarizes previously prepared Biological and Cultural Resources reports pertaining to the project site.

Agency Contacts. Agencies responsible for administering the laws identified in 40 CFR 144.4 were contacted. These include U.S. Fish and Wildlife Service (SUFWS), State Historic Preservation Office (SHPO), and California Department of Fish and Game (CDFG). The project is not near nor would it affect a Wild and Scenic River or a Coastal Zone; therefore, agencies responsible for these two areas were not contacted.

SUFWS: Ryan Olah, Coastal Bay Branch Chief, (916) 414-6623, Ryan_Olah@fws.gov

SHPO: Bill Soule, Assoc. State Archaeologist, (916) 654-4624, wsoule@parks.ca.gov

CDFG: Brenda Blinn, Environmental Scientist, (717) 944-5541, bblinn@dfg.ca.gov

Biology Report Summary. A Biological Resources Assessment (attached) was performed for the 8-acre project site. Potential occurrence of special status species at the project site was evaluated by first determining which special status species may occur in the Montezuma Hills region through a literature and database search. On December 18, 2008, the project site was traversed on foot to determine (1) plant communities present within the site, (2) if existing conditions provided suitable habitat for any special status plant or wildlife species, and (3) if sensitive habitats are present.

No sensitive biological communities are found in the project site. Due to unsuitable habitat and/or soils, and intensive agricultural activity, the project site has the potential to support none of the special status plants documented within 5 miles of the project site. A complete list of the special status plant species and the potential for each occurring in the project site can be found in the Biological Resources Report.

No special status wildlife species were observed at or around the project site during the site assessment. One special status wildlife species (loggerhead shrike) has a high potential to occur in the project area, and two wintering special status bird species have a moderate potential to occur in the project area. The proposed project would have a very minor adverse impact to the loggerhead shrike because of extensive areas of available foraging habitat in the Central Valley region and the absence of suitable nesting habitat within and adjacent to the proposed pad. A complete list of the special status species of wildlife and the potential for each occurring in the project site can be found in the Biological Resources Report.

Federal and State listed species that are documented within 5-miles of the project site include the California tiger salamander (CTS) and Swainson's hawk. However, both species have a low potential to occur in the project area. For the CTS this is because the pad is located in an intensively farmed area. Salamanders are generally dependent on small mammal burrows for shelter during the dry season. The location is disked annually, thereby discouraging burrowing mammal occupancy. Very few pocket gopher



burrows were observed at the pad site. No ground squirrel burrows were observed. The extremely low burrow density suggests that CTS are not present within the project area.

The Swainson's hawk has a low potential to occur in the project area because the project area provides poor foraging habitat because it is primarily bare ground or stubble for most of the summer when the hawks are present. In addition, the presence of wind turbines in high densities adjacent to the proposed pads creates a collision hazard to foraging Swainson's hawks. According to the CDFG Natural Diversity Data Base (2008), there are no documented Swainson's hawk nests within five miles of the proposed pad. The combination of poor foraging habitat, hazardous foraging conditions, no known nests within five miles, and small impact area suggest that the potential project-related impact to Swainson's hawk foraging habitat is minor.

Cultural Assessment Report Summary. A record search was conducted at Sonoma State University by California Historical Resources Information System staff on December 23, 2008. A radius of one mile surrounding the project site was researched. A cultural resources field survey of the site was conducted in December 2008, and is attached.

A former ranch site (P-48-518) is within one mile of the project, 0.75-mile from the proposed well pad (see Table 1 of the Cultural Assessment Report). One archaeological study has been conducted that encompasses the project area (S-10481). No evidence of prehistoric or historic material was recorded by this survey (see Table 2 of the Cultural Assessment Report). However, the report notes the presence of two "historic compounds" within their study area, although neither was evaluated nor researched further. Both are over one mile from the project.

During a pedestrian survey on December 18, 2008, the project area was evaluated for the presence of historic or prehistoric site indicators. The archaeological field survey for the project area covered approximately 150 m N-S and 200 m E-W. This area tended to be flat, with only a shallow valley on the southwest portion. The soil in the project area tended to be brown to dark brown loam with calcareous rock fragments usually about ¼ in. in diameter. Surface visibility for the area averaged 30%. No cultural resources were observed during the field survey.

No resources were identified within the project, nor were any prehistoric sites or historic home sites recorded or noted within one-half mile of the project site. Given the low sensitivity of this area for prehistoric resources, it would not be necessary for a professional archaeologist to monitor any ground disturbing activities associated with the project.

If an unexpected resource is discovered during excavations in the project area, work in the vicinity of the find would be halted until the discovery can be evaluated by a professional archaeologist. Section 5097.94 of the Public Resources Code and Section 7050 of the California Health and Safety Code protect Native American burials, skeletal remains and grave goods, regardless of age, and provide method and means for the appropriate handling of such remains. If human remains are encountered, work would halt in the vicinity and the county coroner would be immediately notified. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of such identification.

Attachments

Email record – USFWS, SHPO, CDFG
Biology Report
Cultural Resources Report